

Cryptosporidiosis

Cryptosporidium Parvum

DISEASE REPORTABLE WITHIN 24 HOURS OF DIAGNOSIS

Per N.J.A.C. 8:57, healthcare providers and administrators shall report by mail or by electronic reporting within 24 hours of diagnosis, confirmed cases of cryptosporidiosis to the health officer of the jurisdiction where the ill or infected person lives, or if unknown, wherein the diagnosis is made. A directory of local health departments in New Jersey is available at

<http://www.state.nj.us/health/lh/directory/lhdselectcounty.shtml>.

If the health officer is unavailable, the healthcare provider or administrator shall make the report to the Department by telephone to 609.588.7500, between 8:00 A.M. and 5:00 P.M. on non-holiday weekdays or to 609.392.2020 during all other days and hours.



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1 THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Cryptosporidium parvum, a coccidian protozoan, is associated with human infection and was not recognized as a cause of human illness until 1976.

B. Clinical Description and Laboratory Diagnosis

The most common symptom of cryptosporidiosis is profuse and watery diarrhea. Other signs and symptoms include weight loss, stomach cramps, nausea, vomiting, and low-grade fever. Symptoms often wax and wane, but remit in fewer than 30 days in most immunocompetent people. Immunodeficiency, especially in HIV infection, is associated with an inability to clear the parasite, and the disease may have a prolonged and fulminant clinical course, contributing to death.

Asymptomatic infections are common and serve as a source of infection for others.

Laboratory diagnosis is generally made by the identification of oocysts in fecal smears. Organisms can also be identified in intestinal biopsy tissue. In addition, new and more sensitive enzyme-linked immunosorbent assay (ELISA) tests have recently become available.

C. Reservoirs

Humans, cattle, and other domestic and wild animals are reservoirs.

D. Modes of Transmission

Infected animals and people excrete large numbers of oocysts in stool. The infectious dose can be very low. Oocysts are relatively hardy and can survive in the environment for weeks or months. They are resistant to concentrations of chlorine and other disinfectants commonly used for drinking water treatment. They can be killed by heat or removed from water by adequate filtration or other methods. The most common mode of transmission is person-to-person. Persons become infected by hand-to-mouth transfer of oocysts from the feces of an infected individual, especially in institutions and daycare centers. Transmission can also

occur person-to-person through certain types of sexual contact (e.g., oral-anal contact). Outbreaks traced to contaminated drinking water have been reported, including an outbreak in Milwaukee that reportedly affected 400,000 people. Localized outbreaks may occur from the ingestion of fecally contaminated recreational waters, such as streams, lakes, swimming pools, or water parks, which are open to contamination by human and animal feces. Outbreaks have also occurred from eating food contaminated by animal feces (e.g., unpasteurized apple cider). Infected food workers have also been the source for food-borne transmission in a few cases. In addition, zoonotic transmission can occur through contact with feces from infected animals (e.g., livestock handlers, dairy farmers, veterinarians).

E. Incubation Period

The incubation period ranges from one to 12 days, with an average of about six to seven days.

F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes *Cryptosporidium* oocysts, which generally begins at the onset of symptoms. Oocysts may be excreted in the stool for several weeks after symptoms subside, and they can remain infective outside the body for two to six months in a moist environment.

G. Epidemiology

Cryptosporidiosis has a worldwide distribution. In developed countries, studies have shown the prevalence of infection to range from less than 1% to 4.5% in individuals surveyed by stool examination. The prevalence is significantly higher in developing regions of the world. Cryptosporidiosis is among the most common causes of persistent diarrhea in patients with AIDS in the United States. Children younger than two years, animal handlers, travelers to endemic areas, men who have sex with men, and close contacts of infected individuals are those most likely to be infected. Outbreaks have been reported in daycare centers and have been associated with public drinking water; swimming in contaminated pools, water parks, lakes, and ponds; and drinking unpasteurized cider made from apples contaminated with cow manure. It is estimated that 50% of dairy calves may shed oocysts and that the parasite is present in more than 90% of dairy farms. In New Jersey, an average of 29 cases of cryptosporidiosis are reported annually to the New Jersey Department of Health and Senior Services (NJDHSS).

2 CASE DEFINITIONS

A. NJDHSS Case Definition

1. Clinical Description

The most common symptom of cryptosporidiosis is profuse and watery diarrhea. Other signs and symptoms include weight loss, stomach cramps, nausea, vomiting, and low-grade fever. Symptoms often wax and wane, but remit in fewer than 30 days in most immunocompetent people. Immunodeficiency, especially in HIV infection, is associated with an inability to clear the parasite, and the disease may have a prolonged and fulminant clinical course, contributing to death.

Asymptomatic infections are common and serve as a source of infection for others.

2. Laboratory Criteria for Diagnosis

Laboratory diagnosis is generally made by the identification of oocysts in fecal smears. Organisms can also be identified in intestinal biopsy tissue. In addition, new and more sensitive enzyme-linked immunosorbent assay (ELISA) tests have recently become available.

3. Case Classification

CONFIRMED

Demonstration of *Cryptosporidium* oocysts in stool, OR

Demonstration of *Cryptosporidium* in intestinal fluid or biopsy specimen, OR

Demonstration of *Cryptosporidium* antigen in the stool by immunofluorescence (IF) or ELISA.

PROBABLE

A clinically compatible case that is epidemiologically linked to a confirmed case by NJDHSS.

POSSIBLE

Not used.

B. Differences From Centers for Disease Control and Prevention (CDC) Case Definition

The formal CDC surveillance case definition for cryptosporidiosis is the same as the criteria outlined in section 2A of this chapter. CDC case definitions are used by state health departments and CDC to maintain uniform standards for national reporting. When reporting a case to the NJDHSS, always refer to reporting criteria in section 2A.

3 LABORATORY TESTING SERVICES AVAILABLE

The Public Health and Environmental Laboratories (PHEL) provide testing for *C. parvum* on formalinized fecal material using an acid-fast stain to identify the presence of oocysts. There is no charge for analysis performed on outbreak-associated samples approved through the Infectious and Zoonotic Diseases Program (IZDP) or other local health department investigations. However, non-outbreak-related samples received will incur a \$5 fee for service. Additional information regarding this testing may be obtained by calling the Enteric Laboratory at 609.292.7368.

The mailing address is:

NJDHSS
Division of Public Health and Environmental Laboratories
Specimen Receiving and Records
PO Box 361
John Fitch Plaza
Trenton, NJ 08625-0361

4 PURPOSE OF SURVEILLANCE AND REPORTING REQUIREMENTS

A. Purpose of Surveillance

- To identify whether the case may be a source of infection for other persons (e.g., if case-patient is a diapered child, daycare attendee, or food handler) and, if so, to prevent further transmission
- To identify transmission sources of public health concern (e.g., a contaminated public water supply) and to stop transmission from such sources

B. Laboratory Reporting Requirements

The New Jersey Administrative Code (NJAC 8:57-1.8) stipulates that laboratories report (by telephone, confidential fax, over the Internet using the Communicable Disease Reporting and Surveillance System [CDRSS], or in writing) all cases of cryptosporidiosis to the local health officer having jurisdiction over the locality in which the patient lives, or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located.

C. Healthcare Provider Reporting Requirements

The New Jersey Administrative Code (NJAC 8:57-1.8) stipulates that healthcare providers report (by telephone, confidential fax, over the Internet using CDRSS, or in writing) all cases

of cryptosporidiosis to the local health officer having jurisdiction over the locality in which the patient lives, or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located.

D. Health Officer Reporting and Follow-Up Responsibilities

The New Jersey Administrative Code (NJAC 8:57-1.8) stipulates that each local health officer must report the occurrence of any case of cryptosporidiosis, as defined by the reporting criteria in section 2A. Current requirements are that cases are to be reported to NJDHSS IZDP using the CDS-1 form. A report can be filed electronically over the Internet using the confidential and secure CDRSS.

5 CASE INVESTIGATION

It is the local health officer's responsibility to complete the CDS-1 form by interviewing the patient and others who may be able to provide pertinent information. Much of the information can be obtained from the patient's healthcare provider or the medical record.

Use the following guidelines in completing the form and conducting the investigation:

1. Accurately record the demographic information, date of symptom onset, symptoms, and medical information.
2. When asking about exposure history (food, travel, activities, etc.), use the incubation period range for cryptosporidiosis (one to 12 days). Focus specifically on the period beginning a minimum of one day prior to the case's symptom onset date back to 12 days before onset.
3. If possible, record any restaurants at which the patient ate, including food item(s) such as raw salads and date(s) consumed.
4. Ask questions about travel history and outdoor activities to help identify other potential exposure sources.
5. Ask questions about water supply and exposure because cryptosporidiosis may be acquired through water consumption.
6. Ask questions regarding household/close contacts and pet or other animal contact.
7. Determine whether the patient attends or works at a daycare facility or is a food handler.
8. If there have been several attempts to obtain patient information (e.g., the patient or healthcare provider does not return calls or does not respond to a letter, or the patient refuses to divulge information or is too ill to be interviewed), fill out the form with as much information as possible. Note on the form the reason why it could not be filled out.

completely. **If CDRSS is used to report, enter collected information in the “Comments” section.**

After completing the form, it should be mailed (in an envelope marked “Confidential”) to NJDHSS IZDP, or the report can be filed electronically over the Internet using the confidential and secure CDRSS.

The mailing address is:

NJDHSS
Division of Epidemiology, Environmental and Occupational Health
Infectious and Zoonotic Diseases Program
PO Box 369
Trenton, NJ 08625-0369

Institution of disease-control measures is an integral part of the case investigation. It is the health officer’s responsibility to understand, and, if necessary, institute the control guidelines listed in section 6, “Controlling Further Spread.”

A. Entry into CDRSS

The mandatory fields in CDRSS include: disease, last name, county, municipality, gender, race, ethnicity, case status, report status.

The following table can be used as a quick reference guide to determine which CDRSS fields need to be completed for accurate and complete reporting of cryptosporidiosis cases. The “Tab” column includes the tabs which appear along the top of the CDRSS screen. The “Required Information” column provides detailed explanations of what data should be entered.

CDRSS Screen	Required Information
Patient Info	Enter the disease name (“CRYPTOSPORIDIOSIS”) in patient demographic information, illness onset date, and the date the case was reported to the local health department (LHD). There are no subgroups for cryptosporidiosis.
Addresses	Enter any alternate address (e.g., a daycare address). Use the Comments section in this screen to record any pertinent information about the alternate address (e.g., the times per week the case-patient attends daycare). Entering an alternate address will allow other disease investigators access to the case if the alternate address falls within their jurisdiction.

CDRSS Screen	Required Information
Clinical Status	Enter any treatment that the patient received and record the names of the medical facilities and physician(s) involved in the patient's care. If the patient received care from two or more hospitals, be sure that all are entered so the case can be accessed by all infection control professionals (ICPs) covering these facilities. If immunization status is known, it should also be entered here. If the patient died, date of death should be recorded under the Mortality section.
Signs/Symptoms	Check appropriate boxes for signs and symptoms and indicate their onset. Make every effort to get complete information by interviewing the physician, family members, ICP, or others who might have knowledge of the patient's illness. Also, information regarding the resolution of signs and symptoms should be entered.
Risk Factors	Enter complete information about risk factors to facilitate study of cryptosporidiosis in New Jersey.
Laboratory Eval	Select the appropriate laboratory test that indicates what type of test was performed, and when appropriate, include what was found or observed, such as "CRYPTOSPORIDIUM OOCYSTS" in the value box.
Contact Tracing	Information regarding contacts is not required for this disease.
Case Comments	Enter general comments (i.e., information that is not discretely captured by a specific topic screen or drop-down menu) in the Comments section. NOTE: Select pieces of information entered in the Comments section CANNOT be automatically exported when generating reports. Therefore, whenever possible, record information about the case in the fields that have been designated to capture this information; information included in these fields CAN be automatically exported when generating reports.
Epidemiology	Under the Other Control Measures section, indicate if the patient falls into any of the categories listed under Patient Role(s)/Function(s) (e.g., "daycare attendee," "daycare provider"). Record name of and contact information for case investigators from other agencies (e.g., CDC, out-of-state health departments). Document communication between investigators in the Comments section.

CDRSS Screen	Required Information
Case Classification Report Status	<p>Case status options are: “REPORT UNDER INVESTIGATION (RUI),” “CONFIRMED,” “PROBABLE,” “POSSIBLE,” and “NOT A CASE.”</p> <ul style="list-style-type: none"> • All cases entered by laboratories (including LabCorp electronic submissions) should be assigned a case status of “REPORT UNDER INVESTIGATION (RUI).” • Cases still under investigation by the LHD should be assigned a case status of “REPORT UNDER INVESTIGATION (RUI).” • Upon completion of the investigation, the LHD should assign a case status on the basis of the case definition. “CONFIRMED” and “NOT A CASE” are the only appropriate options for classifying a case of cryptosporidiosis (see section 2A). <p>Report status options are: “PENDING,” “LHD OPEN,” “LHD REVIEW,” “LHD CLOSED,” “DELETE,” “REOPENED,” “DHSS OPEN,” “DHSS REVIEW,” and “DHSS APPROVED.”</p> <ul style="list-style-type: none"> • Cases reported by laboratories (including LabCorp electronic submissions) should be assigned a report status of “PENDING.” • Once the LHD begins investigating a case, the report status should be changed to “LHD OPEN.” • The “LHD REVIEW” option can be used if the LHD has a person who reviews the case before it is closed (e.g., health officer or director of nursing). • Once the LHD investigation is complete and all the data are entered into CDRSS, the LHD should change the report status to “LHD CLOSED.” <p>“LHD CLOSED” cases will be reviewed by DHSS and be assigned one of the DHSS-specific report status categories. If additional information is needed on a particular case, the report status will be changed to “REOPENED” and the LHD will be notified by e-mail. Cases that are “DHSS APPROVED” cannot be edited by LHD staff (see Section C below).</p>

6 CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements

Food handlers with cryptosporidiosis must be excluded from work.

1. Minimum Period of Isolation of Patient

After diarrhea has resolved, food-handling facility employees may return to work only after producing one negative stool specimen. In outbreak circumstances, a second consecutive negative stool specimen (collected no less than 24 hours after the first specimen) may be required prior to returning to work.

2. Minimum Period of Quarantine of Contacts

Contacts with diarrhea who are food-handling facility employees or provide patientcare or childcare shall be considered the same as case-patients and handled in the same fashion. No restrictions are needed otherwise.

NOTE: A food handler is any person directly preparing or handling food. This can include a patientcare or childcare provider.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

1. Daycare

Because cryptosporidiosis may be transmitted person-to-person through fecal-oral transmission, it is important to follow cases of cryptosporidiosis in a daycare setting. General recommendations include

- Children with cryptosporidiosis who have diarrhea should be excluded until their diarrhea has resolved.
- Children with cryptosporidiosis who have no diarrhea and are otherwise not ill may remain in the program only if special precautions are taken (see Section 6D).
- Because most staff in childcare programs are considered food handlers, those with *Cryptosporidium* in their stools (symptomatic or not) can remain on site but must not prepare food or feed children until their diarrhea has resolved and they have one negative stool test.

2. School

Because cryptosporidiosis may be transmitted person-to-person through fecal-oral transmission, it is important to follow up on cases of cryptosporidiosis in a school setting. General recommendations include

- Students or staff with cryptosporidiosis who have diarrhea should be excluded until their diarrhea has resolved.
- Students or staff with cryptosporidiosis who do not handle food, have no diarrhea or mild diarrhea, and are not otherwise sick may remain in school if special precautions are taken.

3. Residential Programs

Actions taken in response to a case of cryptosporidiosis in a community residential program will depend on the type of program and the level of functioning of the residents. In addition to reporting the outbreak to the local health department, facility management should also report any such outbreak to the Division of Long-Term Care Compliance and Surveillance Program of NJDHSS by telephone at 800.792.9770 or fax at 609.633.9060. A written report should be mailed within 72 hours to NJDHSS, Long-Term Care Compliance and Surveillance Program, PO Box 367, Trenton, NJ 08625. NJDHSS considers an event to be an outbreak if the infectious disease affects 10% of the population, either on one floor, a unit, or total capacity of the facility, or there are three cases of similar symptoms within a 48-hour period.

In long-term care facilities, residents with cryptosporidiosis should be placed on standard (including enteric) precautions until their symptoms subside, and they have one negative test for *Cryptosporidium*. Staff members who give direct patientcare (e.g., feed patients, give mouth or denturecare, or give medications) are considered food handlers and are subject to food-handler restrictions (see section 6A). In addition, staff members with cryptosporidiosis who are not food handlers should not work until their diarrhea has resolved.

In residential facilities for the developmentally disabled, staff and clients with cryptosporidiosis must refrain from handling or preparing food for other residents until their diarrhea has subsided and they have one negative stool test for *Cryptosporidium*. In addition, staff members with cryptosporidiosis who are not food handlers should not work until their diarrhea has resolved.

D. Preventive Measures

1. Personal Preventive Measures and Education

To avoid exposure, recommend that individuals

- Always wash their hands thoroughly with soap and water before handling food or eating, after using the toilet or changing diapers, and after contact with animals, especially cattle.
- After changing diapers, wash the child's hands as well as their own.
- Avoid drinking raw milk, other unpasteurized dairy products, or unpasteurized apple cider.

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- Dispose of feces in a sanitary manner, especially in daycare centers or other institutional settings.
- Avoid drinking water from streams or lakes. Avoid drinking unboiled water while traveling in developing countries or whenever the water quality is unknown. Bringing water to a full, rolling boil for one minute is sufficient to kill *Cryptosporidium*.
- Adhere to local advisories to boil water.

The likelihood that *Cryptosporidium* could cause illness in regulated, public drinking water is low. Immunocompromised individuals, however, may want to consider the following recommendations:

- Avoid fecal contact.
- Avoid sexual practices that may involve direct contact with feces. Latex barrier protection should be emphasized as a way to prevent the spread of *Cryptosporidium* to sexual partners as well as being a way to prevent the exposure to and transmission of other pathogens.
- Boil tap water before drinking or making ice cubes.
- Consider the use of a home water-filtering system with a very fine filter (absolute pore size of one micron or smaller). Such filters include reverse-osmosis filters, filters labeled as “absolute” one-micron filters, and those labeled as meeting National Sanitation Foundation standard #53 for cyst removal.
- Avoid swallowing water when swimming. Lakes, streams (and other surface waters), and swimming pools may be contaminated with *Cryptosporidium*, and chlorination is not effective in eliminating the parasite.

Additional Information

A *Cryptosporidiosis Fact Sheet* can be obtained at the NJDHSS Web site at <http://www.state.nj.us/health>.

References

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